WHAT IS CLAIMED IS:

1. An air compressor, comprising:

a tank portion for reserving compressed air used in a pneumatic tool;

a compressed air generation portion for generating compressed air and supplying said compressed air to said tank portion;

a drive portion including a motor for driving said compressed air generation portion;

a control circuit portion for controlling said drive portion; and

a pressure sensor for detecting pressure of said compressed air reserved in said tank portion;

wherein said control circuit portion includes a unit for controlling the rotational speed of said motor multistageously on the basis of a detection signal output from said pressure sensor.

2. The air compressor according to claim 1,

wherein the rotational speed of said motor is set multistageously to have a plurality of values such as 0, N, 2N, 3N, …, and nN (in which n is an arbitrary number); and

one of said values is selected by said control circuit portion to thereby control said motor.

3. An air compressor, comprising:

a tank portion for reserving compressed air used in a pneumatic tool;

a compressed air generation portion for generating compressed air and supplying said compressed air to said tank portion;

a drive portion including a motor for driving said compressed air generation portion; and

a control circuit portion for controlling said drive portion;

wherein

the control circuit portion includes a unit for calculating internal pressure P of said tank portion on the basis of a detection signal output from a pressure sensor, calculating the rate $\Delta P/\Delta T$ of pressure change ΔP to predetermined time ΔT and deciding the rotational speed of said motor on the basis of at least one of the pressure P and the rate $\Delta P/\Delta T$ of pressure change.

4. An air compressor according to claim 3,

wherein said control circuit portion further includes a memory for storing information indicating relations among the pressure P of said tank portion, the rate $\Delta P/\Delta T$ of pressure change and the rotational speed N of said motor; and the rotational speed of said motor is decided by means of searching

said memory.

5. A method of controlling an air compressor including a tank portion for reserving compressed air used in a pneumatic tool, a compressed air generation portion for generating compressed air and supplying said compressed air to said tank portion, a drive portion having a motor for driving said compressed air generation portion, and a control circuit portion for controlling said drive portion; the method comprising:

detecting pressure P of said compressed air reserved in said tank portion;

calculating the rate $\Delta P/\Delta T$ of change ΔP in pressure P to predetermined time ΔT; and

deciding the rotational speed of said motor of said drive portion on the basis of at least one of the pressure P of said tank portion and the rate $\Delta P/\Delta T$ of pressure change.

6. The method of controlling an air compressor according to claim 5, further comprising:

searching for the rotational speed of said motor by referring to a table stored in a memory of said control circuit portion on the basis of the pressure P of said tank portion and the rate $\Delta P/\Delta T$ of pressure change.

7. An air compressor, comprising:

a tank portion for reserving compressed air used in a pneumatic tool;

a compressed air generation portion for generating compressed air and supplying said compressed air to said tank portion;

a drive portion including a motor for driving said compressed air generation portion;

a control circuit portion for controlling said drive portion; and

a temperature sensor for detecting the temperature of said motor of said drive portion;

wherein said control circuit portion controls the rotational speed of said motor multistageously on the basis of a detection signal output from said temperature sensor.

8. The air compressor according to claim 7, further comprising: a pressure sensor for detecting pressure of compressed air in said tank portion;

wherein said control circuit portion controls the rotational speed of said motor multistageously on the basis of detection signals output from said temperature sensor and said pressure sensor.

9. The air compressor according to claim 7, further comprising: a voltage detection circuit for detecting a

power-supply voltage of said drive portion; and

a current detection circuit for detecting a load current of said drive portion;

wherein said control circuit portion controls the rotational speed of said motor multistageously on the basis of the detection signal output from said temperature sensor and a detection signal output from at least one of said voltage detection circuit and said current detection circuit.

10. The air compressor according to claim 7, wherein said control circuit portion controls the rotational speed of said motor in at least three stages of high speed, middle speed and low speed.

11. A method of controlling an air compressor including a tank portion for reserving compressed air used in a pneumatic tool, a compressed air generation portion for generating compressed air and supplying said compressed air to said tank portion, a drive portion having a motor for driving said compressed air generation portion, and a control circuit portion for controlling said drive portion, said method comprising:

detecting the temperature of said motor of said drive portion by a temperature sensor; and

controlling the rotational speed of said motor in at least three stages of high speed, middle speed and low speed on the

basis of a detection signal output from said temperature sensor.

12. A method of controlling an air compressor according to claim 11, further comprising:

detecting the pressure of compressed air in said tank portion by a pressure sensor; and

controlling the rotational speed of said motor in at least three stages of high speed, middle speed and low speed on the basis of detection signals output from said temperature sensor and said pressure sensor.

13. The method of controlling an air compressor according to claim 11, further comprising:

detecting a power-supply voltage of said drive portion and a load current of said drive portion; and

controlling the rotational speed of said motor in at least three stages of high speed, middle speed and low speed on the basis of the detected voltage and current and a detection signal output from said temperature sensor.

14. An air compressor, comprising:

a tank portion for reserving compressed air used in a pneumatic tool;

a compressed air generation portion for generating compressed air and supplying said compressed air to said tank

portion;

a drive portion including a motor for driving said compressed air generation portion;

a control circuit portion for controlling said drive portion; and

a pressure sensor for detecting pressure of said compressed air reserved in said tank portion;

wherein said control circuit portion calculates the rate $\Delta P1/\Delta T1$ of change $\Delta P1$ in internal pressure of said tank portion to a relatively short time $\Delta T1$ and the rate $\Delta P2/\Delta T2$ of change $\Delta P2$ in internal pressure of said tank portion to a time $\Delta T2$ longer than the time $\Delta T1$ on the basis of detection signals output from said pressure sensor and controls the rotational speed of said motor multistageously on the basis of at least one of the two pressure change rates.

15. The air compressor according to claim 14, further comprising: a temperature sensor for detecting the temperature of said motor;

wherein said control circuit portion controls the rotational speed of said motor multistageously on the basis of the two pressure change rates and a detection signal output from said temperature sensor.

16. The air compressor according to claim 15, further

comprising: a voltage sensor for detecting a power-supply voltage of said drive portion; and

a current sensor for detecting a load current of said drive portion;

wherein said control circuit portion controls the rotational speed of said motor multistageously on the basis of the two pressure change rates and at least one of detection signals output from said voltage sensor and said current sensor.

17. A method of controlling an air compressor including a tank portion for reserving compressed air used in a pneumatic tool, a compressed air generation portion for generating compressed air and supplying said compressed air to said tank portion, a drive portion having a motor for driving said compressed air generation portion, and a control circuit portion for controlling said drive portion;

said method comprising: detecting pressure P of said compressed air reserved in said tank portion; calculating the rate $\Delta P1/\Delta T1$ of pressure change $\Delta P1$ to a relatively short time $\Delta T1$ on the basis of the detected pressure P;

calculating the rate $\Delta P2/\Delta T2$ of pressure change $\Delta P2$ to a time $\Delta T2$ longer than the time $\Delta T1$ on the basis of the detected pressure P; and

controlling the rotational speed of said motor multistageously on the basis of the two pressure change rates.

18. The method of controlling an air compressor according to claim 17, further comprising:

detecting the temperature T of said motor; and

controlling the rotational speed of said motor multistageously on the basis of the two pressure change rates and a detected signal of the temperature T.

19. The method of controlling an air compressor according to claim 17, further comprising:

detecting a power-supply voltage E of said drive portion and a load current I of said drive portion; and

controlling the rotational speed of said motor multistageously on the basis of the two pressure change rates and at least one of the detected power-supply voltage E and the detected load current I.